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INTER-RATER AGREEMENT BETWEEN RESEARCHERS WHEN OBSERVING SIGNS OF TOILET READINESS.

Hypothesis / aims of study

This study is the second in a series investigating the use of readiness signs in an evidence-based way. This research is necessary, as currently agreement and evidence-based research is lacking on which readiness signs to use when deciding on the moment to start toilet training (TT), which has negative consequences [1, 2]. In a previous study, we investigated whether it was possible to observe the readiness signs from a list made after a thorough literature study. Based on that study, we wrote down how each sign should be observed to permit equal observation from different observers. This was used to investigate interobserver correlation.

Study design, materials and methods

The inter-rater agreement of the readiness signs was checked by two observers in 24 healthy children in Flemish day-care centres. These two researchers observed each child during 8 hours at the same moment, independently of each other. The children had a normal mental and physical development and were between 15 and 32 months old. Children with urological, neurological, organic or behaviour problems were excluded from the study. We used SPSS to analyse the inter-rater reliability, calculating the Cohen's Kappa per sign.

Results

We observed 13 girls and 11 boys. At the moment of observation, 6 of the children had not started TT yet, 10 children had started TT, but were not yet toilet trained and 8 children were toilet trained. The results in Table1 show that the agreement of different observers is good. The inter-rater reliability was moderate for two readiness signs (Kappa = 0.41-0.60), namely the child insists on completing tasks without help and is proud of new skills, and the child begins to put things where they belong. For 4 readiness signs, namely readiness sign 1, 6, 7 and 15, the inter-rater agreement was substantial (Kappa = 0.61-0.80). The inter-rater agreement on readiness signs 5, 10, 11 and 13 was almost perfect (Kappa = 0.81-0.91). For signs 3, 12, 16, 17 and 20 the Kappa = 1.00, which means perfect agreement. Both researchers observed readiness signs 2, 4 and 10 as present in all the observed children, which means that no kappa can be calculated as there is no variation, but there is a 100% agreement between the two observers. When one of the variables is a constant, no Kappa can be calculated, as was also the case for signs 8 and 19.

Interpretation of results

The results show that, for most readiness signs of the list, the Cohen's Kappa as well as the agreement between the observers varies from good to perfect. These are positive results, as it means that the assessment of the readiness signs from the list is not dependent on the observer who is assessing the child's readiness objectively. It is important to note that this study does not claim that all these signs are good indicators of the child's toilet readiness. The signs from this list are suggested in the literature by various authors, but it would be interesting to test in an evidence based way which signs are the best predictors of the child's readiness, which signs are most important, and how many of these signs should be present before the child is ready to become toilet trained.

Concluding message

With this study we wanted to investigate the inter-rater agreement of different observers while assessing the readiness signs of a specific list. We can conclude that for most readiness signs of the list the results are positive and show a good to perfect agreement and inter-rater reliability. Further evidence-based research on readiness signs is necessary.

Table1 Inter-rater reliability while observing readiness signs

Readiness sign	Agreement	Cohen's Kappa	Statistical significance	95% Confidence Interval
Readiness sign14: Child insists on completing tasks without help and is proud of new skills	70.8%	0.425	P=0.032	0.076, 0.774
Readiness sign18: Child begins to put things where they belong	72.7%	0.441	P=0.035	0.069, 0.813
Readiness sign15: Child is asking for the pot	90.5%	0.618	P=0.002	0.154, 1.083
Readiness sign1: Child can imitate behaviour	91.7%	0.619	P=0.002	0.137, 1.101
Readiness sign7: Child expresses a need to evacuate. The child indicates most of the time by himself/herself that he/she has a wet / dirty pants	87.5%	0.684	P=0.001	0.355, 1.013
Readiness sign19: Child can sit still on the potty for 5-10 minutes	88.9%	/	/	/
Readiness sign8: Child enjoys putting things in containers	92.3%	/	/	/

Readiness sign6: Child understands and can respond to directions, questions or explanations and can follow simple commands	96%	0.778	P=0.000	0.363, 1.194
Readiness sign11: The child has a broader vocabulary	87.5%	0.805	P=0.000	0.607, 1.003
Readiness sign13: The child is dry after the midday nap	95.7%	0.881	P=0.000	0.654, 1.108
Readiness sign5: Child can say no as sign of independence	96%	0.882	P=0.000	0.659, 1.105
Readiness sign10: Awareness of bladder sensations and need to void	96%	0.913	P=0.000	0.746, 1.080
Readiness sign20: Child stays bowel movement-free overnight	100%	1.00	P=0.000	1.00
Readiness sign17: Child is able to pull clothes up and down in a toilet training related context	100%	1.00	P=0.000	1.00
Readiness sign16: Child wants to be clean and is distressed by wet or soiled diapers	100%	1.00	P=0.000	1.00
Readiness sign12: Child wants to participate in, wants to cooperate with the toilet training and the child shows interest in toilet training	100%	1.00	P=0.000	1.00
Readiness sign3: Child can walk without help	100%	1.00	P=0.000	1.00
Readiness sign2: Child is capable of sitting stable and without help	100%	/	/	/
Readiness sign4: Child is able to pick up small objects	100%	/	/	/
Readiness sign10: Child understands potty related words	100%	/	/	/

References

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